

The Influence of Endogenous Nutrition Knowledge on Consumers' Willingness-to Pay for Grass-Fed Beef

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Abstract

The relationship between nutrition knowledge and consumers' food behavior has been debated for years. This may be partially attributed to the difficulty introduce by endogeneity of nutrition knowledge in econometric modeling. Using grass-fed beef as a vehicle, this paper investigates the impacts of consumers' nutrition knowledge on their willingness to pay by accommodating the endogeneity problem using instrumental variable approach. Our results suggest that consumers' nutrition knowledge significantly influences their willingness to pay for grass-fed beef. Gender and education are influential factors of consumers' nutrition knowledge level.

Introduction

Consumers' knowledge about the importance and usefulness of specific nutrients in a food product may influence their expectation of the product's health benefits which, in turn, affects their food consumption behavior. Given the mixed evidence in the current literature about the influence of nutrition knowledge on food behavior, this study intends to add understanding of the impact of nutrition knowledge on food consumption by assessing the influence of nutrition knowledge on consumers' willingness to pay for a nutritionally differentiated beef product - grass-fed beef.

There is possibility that consumers who offer higher WTP differ inherently from those offer lower WTP. As investigators, we are unable to observe all the factors that may be relevant to explain the differences. If some of these unobservables are correlated with consumers' nutrition knowledge in regression models, endogeneity bias will arise and the true effects of nutrition knowledge on consumers' WTP will be distorted. This study explores the possibility of using instrumental variables to tackle the problem.

Data

Cross-sectional data were collected through in-store non-hypothetical experiments in Virginia, West Virginia, Tennessee, and Kentucky in 2008.

Table 1: Data Summary

Description	Scale	Mean	S.D.	N
Willingness-To-Pay	>=0, continuous	0.7089	1.5607	404
Treatment B	1=Treatment B/otherwise	0.3614	0.4810	404
Treatment C	1=Treatment C/otherwise	0.2599	0.4391	404
Beef consumption frequency per week	Categorical, 1 - 3	2.3515	0.9062	404
Consumption experience about grass-fed beef	1=Yes, 0 otherwise	0.5767	0.4947	404
If the participant has ever been diagnosed with any of the five food-related diseases	1=Yes, 0 otherwise	0.5507	0.4970	404
If the participant's household member has ever been diagnosed with any of the five food-related diseases	1=Yes, 0 otherwise	0.7711	0.4206	404
Difference of lean meat color evaluation scores, conventional beef minus pasture-fed beef	-6 to 6	-0.8540	1.3718	404
Difference of fat color evaluation scores, conventional beef minus pasture-fed beef	-6 to 6	-0.3713	1.8307	404
Difference of meat texture evaluation scores, conventional beef minus pasture-fed beef	-6 to 6	0.0693	1.8112	404
Difference of juiciness evaluation scores, conventional beef minus pasture-fed beef	-6 to 6	-0.3366	2.0851	404
Difference of tenderness evaluation scores, conventional beef minus pasture-fed beef	-6 to 6	0	1.8921	404
Difference of flavor evaluation scores, conventional beef minus pasture-fed beef	-6 to 6	-2.921	1.6904	404
Response's gender	1=male, 0 otherwise	0.3388	0.4662	404
Participant's age	1=6, 2=13, 3=19, 4=26, 5=34, 6=41, 7=49, 8=57, 9=65, 10=73, 11=81, 12=89, 13=97, 14=105, 15=113, 16=121, 17=129, 18=137, 19=145, 20=153, 21=161, 22=169, 23=177, 24=185, 25=193, 26=201, 27=209, 28=217, 29=225, 30=233, 31=241, 32=249, 33=257, 34=265, 35=273, 36=281, 37=289, 38=297, 39=305, 40=313, 41=321, 42=329, 43=337, 44=345, 45=353, 46=361, 47=369, 48=377, 49=385, 50=393, 51=401, 52=409, 53=417, 54=425, 55=433, 56=441, 57=449, 58=457, 59=465, 60=473, 61=481, 62=489, 63=497, 64=505, 65=513, 66=521, 67=529, 68=537, 69=545, 70=553, 71=561, 72=569, 73=577, 74=585, 75=593, 76=601, 77=609, 78=617, 79=625, 80=633, 81=641, 82=649, 83=657, 84=665, 85=673, 86=681, 87=689, 88=697, 89=705, 90=713, 91=721, 92=729, 93=737, 94=745, 95=753, 96=761, 97=769, 98=777, 99=785, 100=793, 101=801, 102=809, 103=817, 104=825, 105=833, 106=841, 107=849, 108=857, 109=865, 110=873, 111=881, 112=889, 113=897, 114=905, 115=913, 116=921, 117=929, 118=937, 119=945, 120=953, 121=961, 122=969, 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